# Introduction - Grade 5 Mathematics

The following released test questions are taken from the Grade 5 Mathematics Standards Test. This test is one of the California Standards Tests administered as part of the Standardized Testing and Reporting (STAR) Program under policies set by the State Board of Education.

All questions on the California Standards Tests are evaluated by committees of content experts, including teachers and administrators, to ensure their appropriateness for measuring the California academic content standards in Grade 5 Mathematics. In addition to content, all items are reviewed and approved to ensure their adherence to the principles of fairness and to ensure no bias exists with respect to characteristics such as gender, ethnicity, and language.

This document contains released test questions from the California Standards Test forms in 2003, 2004, and 2005. First on the pages that follow are lists of the standards assessed on the Grade 5 Mathematics Test. Next are released test questions. Following the questions is a table that gives the correct answer for each question, the content standard that each question is measuring, and the year each question last appeared on the test.

The following table lists each strand/reporting cluster, the number of items that appear on the exam, and the number of released test questions that appear in this document.

| STRAND/REPORTING CLUSTER | NUMBER OF QUESTIONS ON EXAM | NUMBER OF RELEASED TEST QUESTIONS |
|---|---|---|
| Number Sense – Estimation, Percents, and Factoring | 12 | 11 |
| Number Sense – Operations with Fractions and Decimals | 17 | 13 |
| Algebra and Functions | 17 | 12 |
| Measurement and Geometry | 15 | 9 |
| Statistics, Data Analysis, and Probability | 4 | 3 |
| TOTAL | 65 | 48 |

In selecting test questions for release, three criteria are used: (1) the questions adequately cover a selection of the academic content standards assessed on the Grade 5 Mathematics Test; (2) the questions demonstrate a range of difficulty; and (3) the questions present a variety of ways standards can be assessed. These released test questions do not reflect all of the ways the standards may be assessed. Released test questions will not appear on future tests.

For more information about the California Standards Tests, visit the California Department of Education's Web site at http://www.cde.ca.gov/ta/tg/sr/resources.asp.

# THE NUMBER SENSE STRAND

In Grade 5, there are two reporting clusters within the Number Sense strand: 1) Estimation, Percents, and Factoring and 2) Operations with Fractions and Decimals. This booklet contains released test questions for each of these clusters.

The following five California content standards are included in the Estimation, Percents, and Factoring reporting cluster of the Number Sense strand and are represented in this booklet by 11 test questions. These questions represent only some ways in which these standards may be assessed on the Grade 5 California Mathematics Standards Test.

### CALIFORNIA CONTENT STANDARDS IN THIS REPORTING CLUSTER

| Number Sense | |
|---|---|
| **Standard Set 1.0** | **Students compute with very large and very small numbers, positive integers, decimals, and fractions and understand the relationship between decimals, fractions, and percents. They understand the relative magnitudes of numbers:** |
| 5NS1.1 | Estimate, round, and manipulate very large (e.g., millions) and very small (e.g., thousandths) numbers. |
| 5NS1.2* | Interpret percents as a part of a hundred; find decimal and percent equivalents for common fractions and explain why they represent the same value; compute a given percent of a whole number. |
| 5NS1.3 | Understand and compute positive integer powers of nonnegative integers; compute examples as repeated multiplication. |
| 5NS1.4* | Determine the prime factors of all numbers through 50 and write the numbers as the product of their prime factors by using exponents to show multiples of a factor (e.g., $24 = 2 \times 2 \times 2 \times 3 = 2^3 \times 3$). |
| 5NS1.5* | Identify and represent on a number line decimals, fractions, mixed numbers, and positive and negative integers. |

\* Denotes key standards (*Mathematics Framework for California Public Schools*)

The following five California content standards are included in the Operations with Fractions and Decimals reporting cluster of the Number Sense strand and are represented in this booklet by 13 test questions. These questions represent only some ways in which these standards may be assessed on the Grade 5 California Mathematics Standards Test.

## CALIFORNIA CONTENT STANDARDS IN THIS REPORTING CLUSTER

**Number Sense**

| | |
|---|---|
| **Standard Set 2.0** | **Students perform calculations and solve problems involving addition, subtraction, and simple multiplication and division of fractions and decimals:** |
| 5NS2.1* | Add, subtract, multiply, and divide with decimals; add with negative integers; subtract positive integers from negative integers; and verify the reasonableness of the results. |
| 5NS2.2* | Demonstrate proficiency with division, including division with positive decimals and long division with multidigit divisors. |
| 5NS2.3* | Solve simple problems, including ones arising in concrete situations, involving the addition and subtraction of fractions and mixed numbers (like and unlike denominators of 20 or less), and express answers in the simplest form. |
| 5NS2.4 | Understand the concept of multiplication and division of fractions. |
| 5NS2.5 | Compute and perform simple multiplication and division of fractions and apply these procedures to solving problems. |

\* Denotes key standards (*Mathematics Framework for California Public Schools*)

# THE ALGEBRA AND FUNCTIONS STRAND/REPORTING CLUSTER

The following five California content standards are included in the Algebra and Functions strand/reporting cluster and are represented in this booklet by 12 test questions. These questions represent only some ways in which these standards may be assessed on the Grade 5 California Mathematics Standards Test.

## CALIFORNIA CONTENT STANDARDS IN THIS STRAND/CLUSTER

| Algebra and Functions | |
| --- | --- |
| **Standard Set 1.0** | **Students use variables in simple expressions, compute the value of the expression for specific values of the variable, and plot and interpret the results:** |
| 5AF1.1 | Use information taken from a graph or equation to answer questions about a problem situation. |
| 5AF1.2* | Use a letter to represent an unknown number; write and evaluate simple algebraic expressions in one variable by substitution. |
| 5AF1.3 | Know and use the distributive property in equations and expressions with variables. |
| 5AF1.4* | Identify and graph ordered pairs in the four quadrants of the coordinate plane. |
| 5AF1.5* | Solve problems involving linear functions with integer values; write the equation; and graph the resulting ordered pairs of integers on a grid. |

\* Denotes key standards (*Mathematics Framework for California Public Schools*)

# THE MEASUREMENT AND GEOMETRY STRAND/REPORTING CLUSTER

The following seven California content standards are included in the Measurement and Geometry strand/ reporting cluster and are represented in this booklet by nine test questions. These questions represent only some ways in which these standards may be assessed on the Grade 5 California Mathematics Standards Test.

## CALIFORNIA CONTENT STANDARDS IN THIS STRAND/CLUSTER

**Measurement and Geometry**

| | |
|---|---|
| **Standard Set 1.0** | **Students understand and compute the volumes and areas of simple objects:** |
| 5MG1.1* | Derive and use the formula for the area of a triangle and of a parallelogram by comparing it with the formula for the area of a rectangle (i.e., two of the same triangles make a parallelogram with twice the area; a parallelogram is compared with a rectangle of the same area by cutting and pasting a right triangle on the parallelogram). |
| 5MG1.2* | Construct a cube and rectangular box from two-dimensional patterns and use these patterns to compute the surface area for these objects. |
| 5MG1.3* | Understand the concept of volume and use the appropriate units in common measuring systems (i.e., cubic centimeter [$cm^3$], cubic meter [$m^3$], cubic inch [$in^3$], cubic yard [$yd^3$]) to compute the volume of rectangular solids. |
| 5MG1.4 | Differentiate between, and use appropriate units of measures for, two- and three-dimensional objects (i.e., find perimeter, area, volume). |
| **Standard Set 2.0** | **Students identify, describe, and classify the properties of, and the relationships between, plane and solid geometric figures:** |
| 5MG2.1* | Measure, identify, and draw angles, perpendicular and parallel lines, rectangles, and triangles by using appropriate tools (e.g., straightedge, ruler, compass, protractor, drawing software). |
| 5MG2.2* | Know that the sum of the angles of any triangle is 180° and the sum of the angles of any quadrilateral is 360° and use this information to solve problems. |
| 5MG2.3 | Visualize and draw two-dimensional views of three-dimensional objects made from rectangular solids. |

\* Denotes key standards (*Mathematics Framework for California Public Schools*)

# THE STATISTICS, DATA ANALYSIS, AND PROBABILITY STRAND/REPORTING CLUSTER

The following five California content standards are included in the Statistics, Data Analysis, and Probability strand/reporting cluster and are represented in this booklet by three test questions. These questions represent only some ways in which these standards may be assessed on the Grade 5 California Mathematics Standards Test.

## CALIFORNIA CONTENT STANDARDS IN THIS STRAND/CLUSTER

| Statistics, Data Analysis, and Probability | |
| --- | --- |
| **Standard Set 1.0** | **Students display, analyze, compare, and interpret different data sets, including data sets of different sizes:** |
| 5PS1.1 | Know the concepts of mean, median, and mode; compute and compare simple examples to show that they may differ. |
| 5PS1.2 | Organize and display single-variable data in appropriate graphs and representations (e.g., histogram, circle graphs) and explain which types of graphs are appropriate for various data sets. |
| 5PS1.3 | Use fractions and percentages to compare data sets of different sizes. |
| 5PS1.4* | Identify ordered pairs of data from a graph and interpret the meaning of the data in terms of the situation depicted by the graph. |
| 5PS1.5* | Know how to write ordered pairs correctly; for example, (*x, y*). |

\* Denotes key standards (*Mathematics Framework for California Public Schools*)

## Released Test Questions

**1** What is 6050.287 rounded to the nearest ten?

   **A** 6050

   **B** 6100

   **C** 6050.29

   **D** 6050.3

**2** The total land area for the United States is 3,537,438 square miles. What is this value rounded to the nearest thousand square miles?

   **A** 3,500,000

   **B** 3,537,000

   **C** 3,538,000

   **D** 3,540,000

**3** What is 40% of 250?

   **A** 50

   **B** 100

   **C** 150

   **D** 200

**4** What is $\frac{3}{8}$ written as a percent?

   **A** 26.7%

   **B** 30%

   **C** 37.5%

   **D** 50%

**5** What is the decimal 0.7 written as a fraction?

   **A** $\frac{1}{7}$

   **B** $\frac{3}{4}$

   **C** $\frac{3}{7}$

   **D** $\frac{7}{10}$

**6** A company donated 200 books to a local library. If 70 of them are fiction, what percent of the donated books are fiction?

   **A** 35%

   **B** 40%

   **C** 60%

   **D** 65%

**7** $$5^3 =$$

   **A** $5 \times 5 \times 5$

   **B** $5 + 5 + 5$

   **C** $3 \times 3 \times 3 \times 3 \times 3$

   **D** $3 + 3 + 3 + 3 + 3$

**8** What is the prime factorization of 45?

   **A** $2^3 \times 5$

   **B** $3^2 \times 5$

   **C** $5^2 \times 3$

   **D** $5^2 \times 9$

**9**  **What is the prime factorization of 12?**

A  $2^2 \times 3$

B  $2^2 \times 3^2$

C  $4 \times 3$

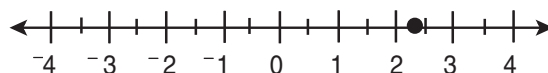D  $1 \times 2$

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**10**

P  Q  R  S

-5    0

**Which letter on the number line best identifies the location of ⁻6?**

A  P

B  Q

C  R

D  S

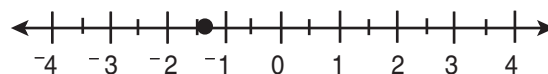**11**  **Which point on the number line *best* represents 1.35?**

⁻4  ⁻3  ⁻2  ⁻1  0  1  2  3  4

A

⁻4  ⁻3  ⁻2  ⁻1  0  1  2  3  4

B

⁻4  ⁻3  ⁻2  ⁻1  0  1  2  3  4

C

⁻4  ⁻3  ⁻2  ⁻1  0  1  2  3  4
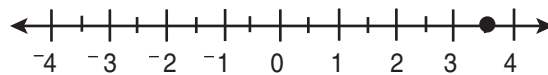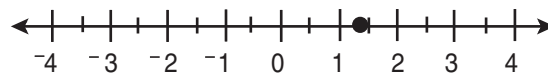
D

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**12**                    **11.3 × 2.7 =**

A  29.31

B  29.51

C  30.31

D  30.51

— 8 —

**13** Javier bought 9 pounds of ground beef. He saved $8.37 by using a store coupon. How much did he save per pound of ground beef?

A $0.89

B $0.93

C $1.08

D $75.33

**14** Veronica can type 28 words per minute. At this rate, how many words can Veronica type in 5.5 minutes?

A 154

B 157

C 159

D 162

**15** Tony had a rope 8.35 meters long. He cut off 2.6 meters. How long was the piece of rope that was left?

A 5.65 meters

B 5.75 meters

C 6.65 meters

D 6.75 meters

**16**
$$39.06$$
$$\times \quad 0.3$$

A 9.708

B 9.718

C 11.608

D 11.718

**17** $15.12 \div 2.4 =$

A 0.513

B 0.63

C 5.13

D 6.3

**18** $35,705 \div 37 =$

A 89

B 843

C 925

D 965

**19** Maurice talked on the telephone to two friends. He talked to Sherry for $\frac{1}{4}$ hour, and to Gabriel for $\frac{1}{3}$ hour. How much time did Maurice spend on the telephone?

A $\frac{1}{6}$ hour

B $\frac{2}{7}$ hour

C $\frac{5}{12}$ hour

D $\frac{7}{12}$ hour

**20**     $2\dfrac{1}{3}+4\dfrac{1}{2}=$

A     $6\dfrac{1}{6}$

B     $6\dfrac{1}{5}$

C     $6\dfrac{2}{5}$

D     $6\dfrac{5}{6}$

**21**  It takes Suzanne $\dfrac{1}{6}$ hour to walk to the playground and $\dfrac{1}{3}$ hour to walk from the playground to school. How much time does it take Suzanne to walk to the playground and then to school?

A     $\dfrac{2}{9}$ hour

B     $\dfrac{1}{3}$ hour

C     $\dfrac{1}{2}$ hour

D     $\dfrac{2}{3}$ hour

**22**     $4\dfrac{3}{4}-2\dfrac{1}{2}=$

A     $1\dfrac{1}{4}$

B     $1\dfrac{3}{4}$

C     $2\dfrac{1}{4}$

D     $2\dfrac{3}{4}$

**23**     $\dfrac{3}{4}\div\dfrac{3}{5}=$

A     $\dfrac{9}{20}$

B     $\dfrac{4}{5}$

C     $1\dfrac{1}{4}$

D     $2\dfrac{2}{9}$

**24**     $\dfrac{1}{5}\bullet\dfrac{1}{6}=$

A     $\dfrac{1}{11}$

B     $\dfrac{2}{11}$

C     $\dfrac{1}{30}$

D     $\dfrac{2}{30}$

25

$$c + 2\frac{1}{2}$$

**Which situation could be described by the expression above?**

A   Lia jogged $c$ miles yesterday, and $2\frac{1}{2}$ miles farther today.

B   Lia jogged $c$ miles yesterday, and $2\frac{1}{2}$ miles fewer today.

C   Lia jogged $2\frac{1}{2}$ miles yesterday, and $c$ miles fewer today.

D   Lia jogged $2\frac{1}{2}$ miles yesterday, and $c$ times as far today.

26   **If $N = 4$, what is the value of $6 \times N - 3$?**

A   6

B   9

C   18

D   21

27   **If $k = 6$, what is the value of $7k - 2$?**

A   30

B   40

C   54

D   65

28   **If $n = 31$, what is the value of $6 - n$?**

A   $^-37$

B   $^-25$

C   25

D   37

29   **Which expression represents the product of $n$ and 25?**

A   $25n$

B   $25 - n$

C   $25 + n$

D   $25 \div n$

30   **What value for $z$ makes this equation true?**

$$8 \times 37 = (8 \times 30) + (8 \times z)$$

A   7

B   8

C   30

D   37

**31** The map below shows the starting positions of two scientists studying plants in a rain forest.

**Scientists in Rain Forest**
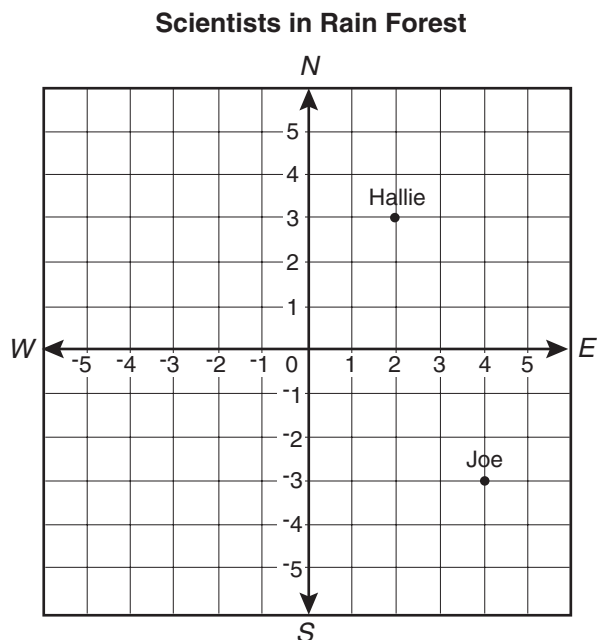


**Which ordered pair _best_ names Joe's location?**

A $(3, {}^-4)$

B $({}^-3, 4)$

C $(4, {}^-3)$

D $({}^-4, 3)$

**32** The map below shows the location of 4 different stores.
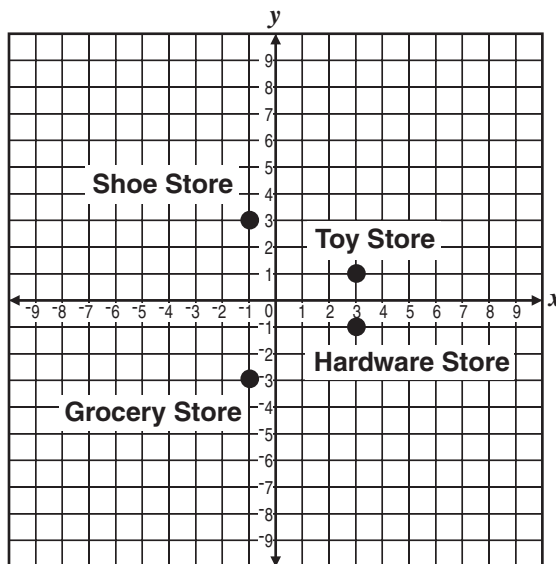


**Which store is at the point $(3, {}^-1)$?**

A Hardware Store

B Grocery Store
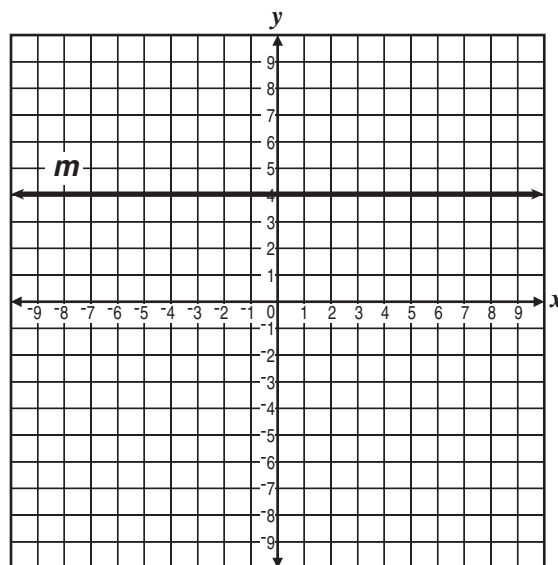
C Shoe Store

D Toy Store

**Released Test Questions**

**33** Which equation could have been used to create this function table?

| x | y |
|---|---|
| −9 | −5 |
| −2 | 2 |
| 4 | 8 |
| 11 | 15 |

**A** $y = \dfrac{x}{2}$

**B** $y = 2x$

**C** $y = x - 4$

**D** $y = x + 4$

**34** Line *m* is represented by the equation $y = 4$.



Which ordered pair is located on line *m*?

**A** (1, 4)

**B** (0, 0)

**C** (4, 1)

**D** (4, 0)

**35** Which table represents values of *x* and *y* such that $y = x + 5$?

**A**

| x | y |
|---|---|
| ‾1 | 4 |
| 0 | 5 |

**B**

| x | y |
|---|---|
| ‾1 | ‾6 |
| 0 | ‾5 |

**C**

| x | y |
|---|---|
| 2 | 5 |
| 5 | 0 |

**D**

| x | y |
|---|---|
| 2 | 3 |
| 3 | 0 |

**36** Which equation shows the relationship of all the values in the table below?

| x | y |
|---|---|
| ‾2 | ‾6 |
| ‾1 | ‾3 |
| 0 | 0 |
| 1 | 3 |
| 2 | 6 |

**A** $y = 3x$

**B** $x = y + 3$

**C** $y = x + 3$

**D** $x = 3y$

**37** In the figure below, *WXYZ* is a parallelogram.
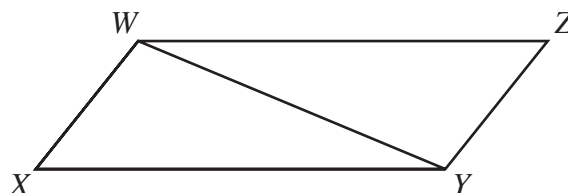


If the area of triangle *WXY* is 22 square inches, what is the area of *WXYZ*?

**A** 11 square inches

**B** 22 square inches

**C** 33 square inches

**D** 44 square inches

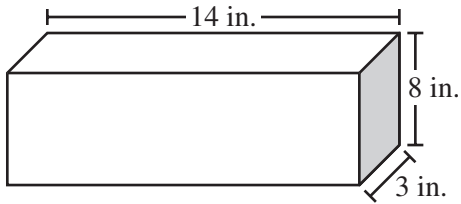**38** What is the surface area of the box formed by the pattern below?
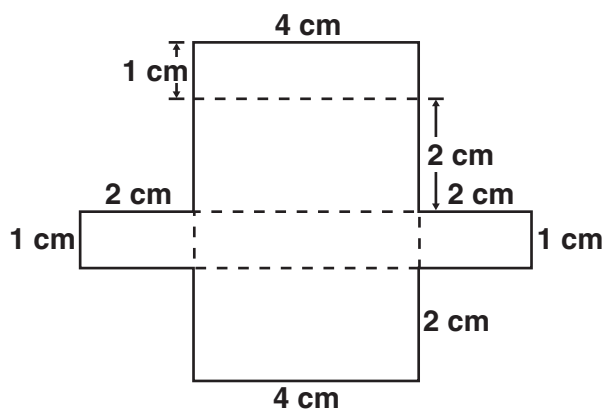


**A** 28 cm$^2$

**B** 24 cm$^2$

**C** 14 cm$^2$

**D** 8 cm$^2$

— 14 —

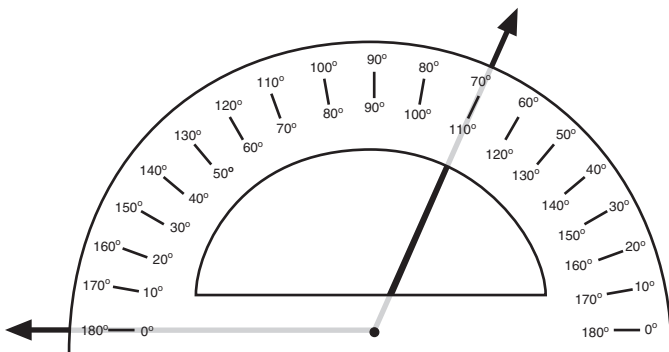**39**



This rectangular prism has a length of 14 inches, a height of 8 inches, and a width of 3 inches. What is the volume?

A    25 cu in.

B    42 cu in.

C    112 cu in.

D    336 cu in.
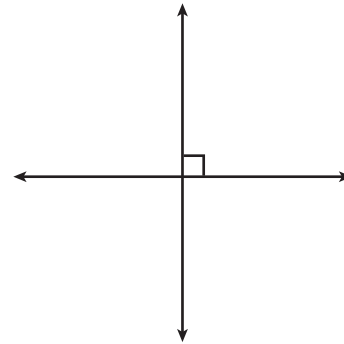
**40**   Which is *closest* to the measure of the angle shown below?



A    70°

B    80°

C    100°

D    110°

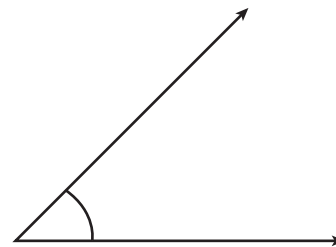**41**   Which of the following *best* describes the figure below?



A    acute angles

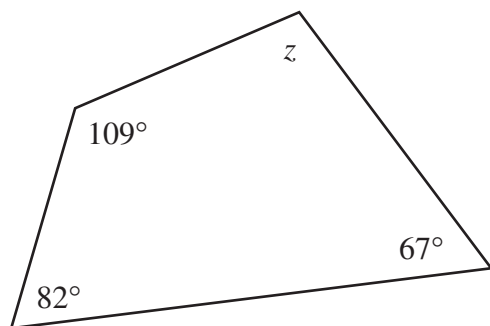B    obtuse angles

C    parallel lines

D    perpendicular lines

**42**   What is the approximate measure of this angle in degrees?



A    20°

B    45°

C    110°

D    135°

**43**



**What is the measure of angle *z* in the figure above?**

A   12°

B   102°

C   122°

D   180°

**44**
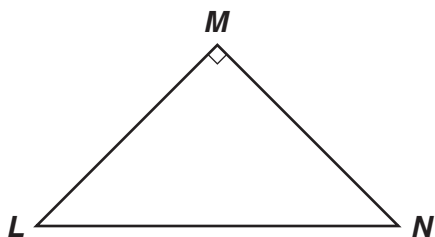


**Triangle *LMN* is a right triangle, and angles *L* and *N* are equal. What is the measure of angle *L*?**

A   25°

B   45°

C   70°

D   90°

**45** **Nina made a triangle by cutting the corner off a sheet of paper.**
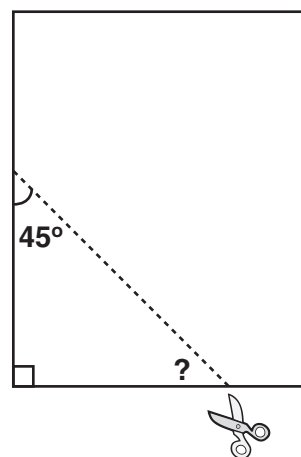


**One angle is 45°. What is the measure of the third angle of Nina's triangle?**

A   30°

B   45°

C   55°

D   60°

**46** **Sharice scored the following numbers of points in 5 dart games.**

**88, 96, 112, 135, 144**

**What is the median of these numbers?**
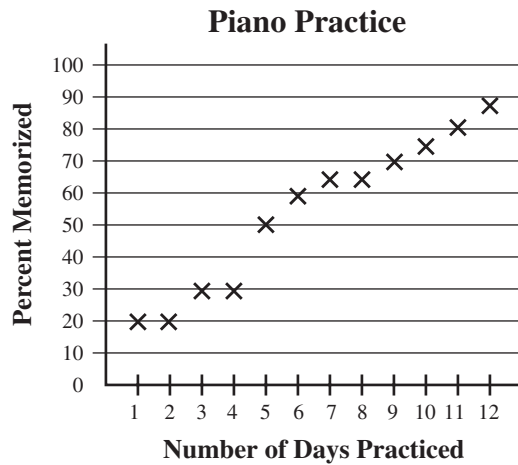
A   56

B   88

C   112

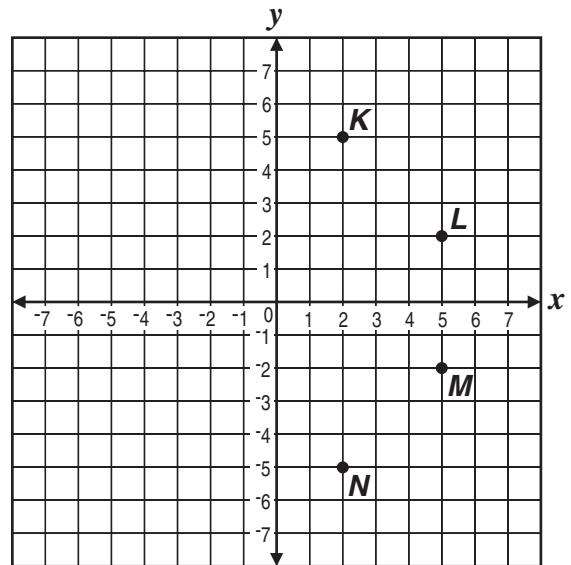D   115

**Released Test Questions**

**47** Regina's piano teacher kept this record of Regina's progress on a song she is memorizing.

**Piano Practice**



**How many days of practice did it take for Regina to memorize half of the song?**

A    4

B    5

C    6

D    8

**48** Which point represents (5, 2) on this graph?



A    point *K*

B    point *L*

C    point *M*

D    point *N*

— 17 —

| Question Number | Correct Answer | Standard | Year of Test |
|:---:|:---:|:---|:---:|
| 1 | A | 5NS1.1 | 2004 |
| 2 | B | 5NS1.1 | 2005 |
| 3 | B | 5NS1.2 | 2003 |
| 4 | C | 5NS1.2 | 2004 |
| 5 | D | 5NS1.2 | 2005 |
| 6 | A | 5NS1.2 | 2005 |
| 7 | A | 5NS1.3 | 2003 |
| 8 | B | 5NS1.4 | 2003 |
| 9 | A | 5NS1.4 | 2004 |
| 10 | A | 5NS1.5 | 2003 |
| 11 | C | 5NS1.5 | 2004 |
| 12 | D | 5NS2.1 | 2003 |
| 13 | B | 5NS2.1 | 2004 |
| 14 | A | 5NS2.1 | 2005 |
| 15 | B | 5NS2.1 | 2005 |
| 16 | D | 5NS2.1 | 2005 |
| 17 | D | 5NS2.2 | 2003 |
| 18 | D | 5NS2.2 | 2004 |
| 19 | D | 5NS2.3 | 2003 |
| 20 | D | 5NS2.3 | 2004 |
| 21 | C | 5NS2.3 | 2005 |
| 22 | C | 5NS2.3 | 2005 |
| 23 | C | 5NS2.4 | 2003 |
| 24 | C | 5NS2.5 | 2004 |
| 25 | A | 5AF1.1 | 2004 |
| 26 | D | 5AF1.2 | 2003 |
| 27 | B | 5AF1.2 | 2004 |
| 28 | B | 5AF1.2 | 2005 |
| 29 | A | 5AF1.2 | 2005 |
| 30 | A | 5AF1.3 | 2003 |
| 31 | C | 5AF1.4 | 2003 |
| 32 | A | 5AF1.4 | 2004 |
| 33 | D | 5AF1.5 | 2003 |
| 34 | A | 5AF1.5 | 2004 |
| 35 | A | 5AF1.5 | 2005 |
| 36 | A | 5AF1.5 | 2005 |

| Question Number | Correct Answer | Standard | Year of Test |
|---|---|---|---|
| 37 | D | 5MG1.1 | 2003 |
| 38 | A | 5MG1.2 | 2004 |
| 39 | D | 5MG1.3 | 2003 |
| 40 | D | 5MG2.1 | 2004 |
| 41 | D | 5MG2.1 | 2005 |
| 42 | B | 5MG2.1 | 2005 |
| 43 | B | 5MG2.2 | 2003 |
| 44 | B | 5MG2.2 | 2004 |
| 45 | B | 5MG2.2 | 2005 |
| 46 | C | 5PS1.1 | 2004 |
| 47 | B | 5PS1.4 | 2003 |
| 48 | B | 5PS1.5 | 2005 |